



**Armed Forces College of
Medicine
AFCM**





Pathology of melanocytic skin disorders

INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. Describe the pathology of mycosis fungoides
2. Analyse the given clinical and laboratory findings to reach diagnosis of pathological conditions related to neoplastic skin lesions
3. Classify types of melanocytic lesions.
4. Describe pathology of melanocytic lesions.
5. Compare the gross and microscopic features of benign and malignant melanocytic tumors.
6. Analyse the given clinical and laboratory findings to reach diagnosis of pathological conditions related to melanocytic skin lesions

Lecture Plan



1. Part 1 (5 min) mycosis fungoides
2. Part 2 (15 min) Nevus
3. Part 3 (15 min) melanoma
4. Lecture Quiz (5 min)

Cellular migrants to skin



These are proliferative disorders of cells that arise elsewhere but home to skin

- **Mycosis fungoides** (cutaneous T cell lymphoma)





Mycosis fungoides:

- Cutaneous T-cell lymphoma (CTCL) represents a spectrum of T-cell lymphoproliferative disorders of the skin



Cellular migrants to skin



- Mycosis fungoides is a CTCL that can evolve into a **generalized lymphoma**;
- Occurs in older than 40 years and remain localized to skin for many years.
- **Se´zary syndrome** occurs with seeding of the **blood** by malignant T cells, accompanied by diffuse erythema and scaling (**erythroderma**).



<http://www.pathologyoutlines.com/topic/lymphomanonBsml>



Cellular migrants to skin



Grossly:

Early lesions resemble **eczema** □ these progress to scaly, red-brown patches, or fungating nodules (up to 10 cm) on various body surfaces, correlating with systemic spread.

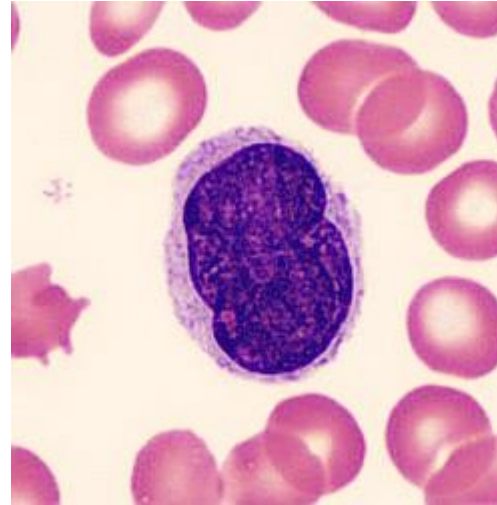


Cellular migrants to skin

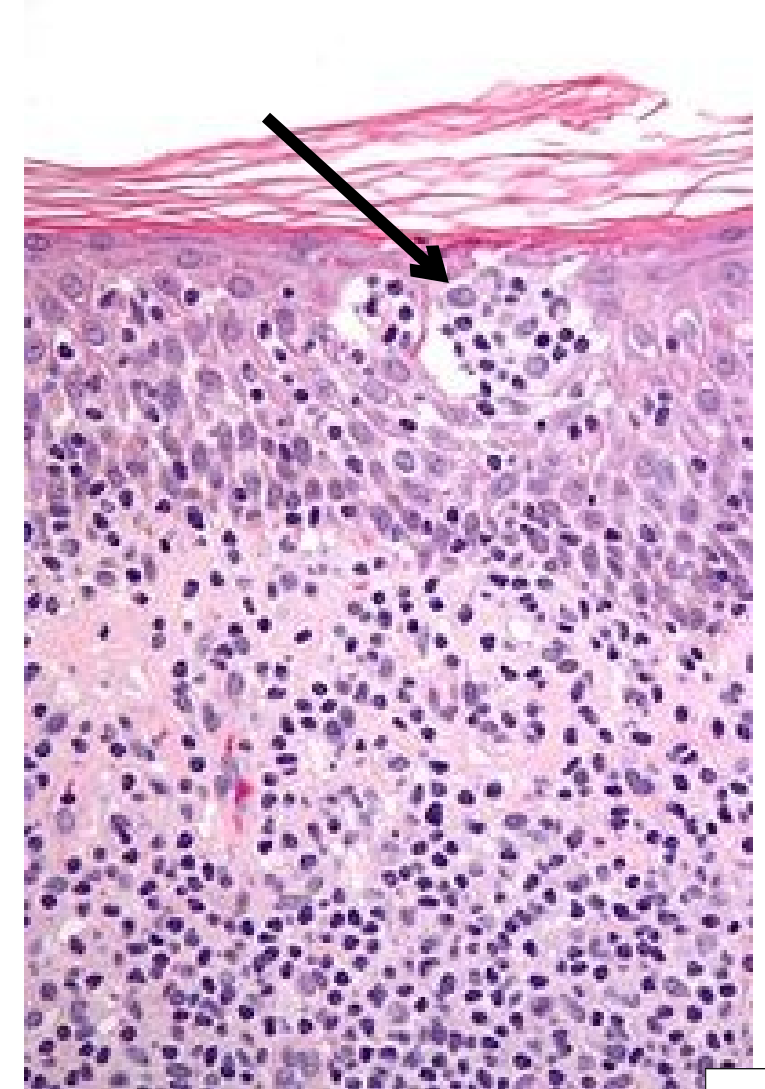


Microscopically:

- The hallmark of mycosis fungoides is the **Se´zary-Lutzner cell**, a malignant CD4p (T-helper) cell with a **cerebriform** nucleus
- These are present in dermis



https://en.wikipedia.org/wiki/Lutzner_cells



https://upload.wikimedia.org/wikipedia/commons/utaneous_T-cell_lymphoma_-_very_high_mag.jpg



Quiz



Which of the following is false about mycosis fungoides:

- A. It is cutaneous lymphoma that can progress to generalized form
- B. It is a benign tumor
- C. It can cause erythroderma
- D. It is T cell lymphoma
- E. It is one of the cellular migrants to skin



Quiz



Which of the following is false about mycosis fungoides:

- A. It is cutaneous lymphoma that can progress to generalized form
- B. It is a benign tumor**
- C. It can cause erythroderma
- D. It is T cell lymphoma
- E. It is one of the cellular migrants to skin



Melanocytic lesions



MELANOCYTES

These are melanin-producing neural crest-derived cells located in the bottom layer (**the stratum basale**) of the skin's epidermis



Melanocytic lesions



Nevus

Congenital or acquired benign neoplasms of melanocytes.

Gross picture: small **uniformly pigmented** tan to brown papules,

Any nevus shows clinical signs of recent changes in size, shape, or color, or bleeding should be excised.



<http://finantempleton.com/patient-information/patient-education/melanocytic-nevi-moles>

Melanocytic lesions



Nevus

Nevi mature through characteristic stages:

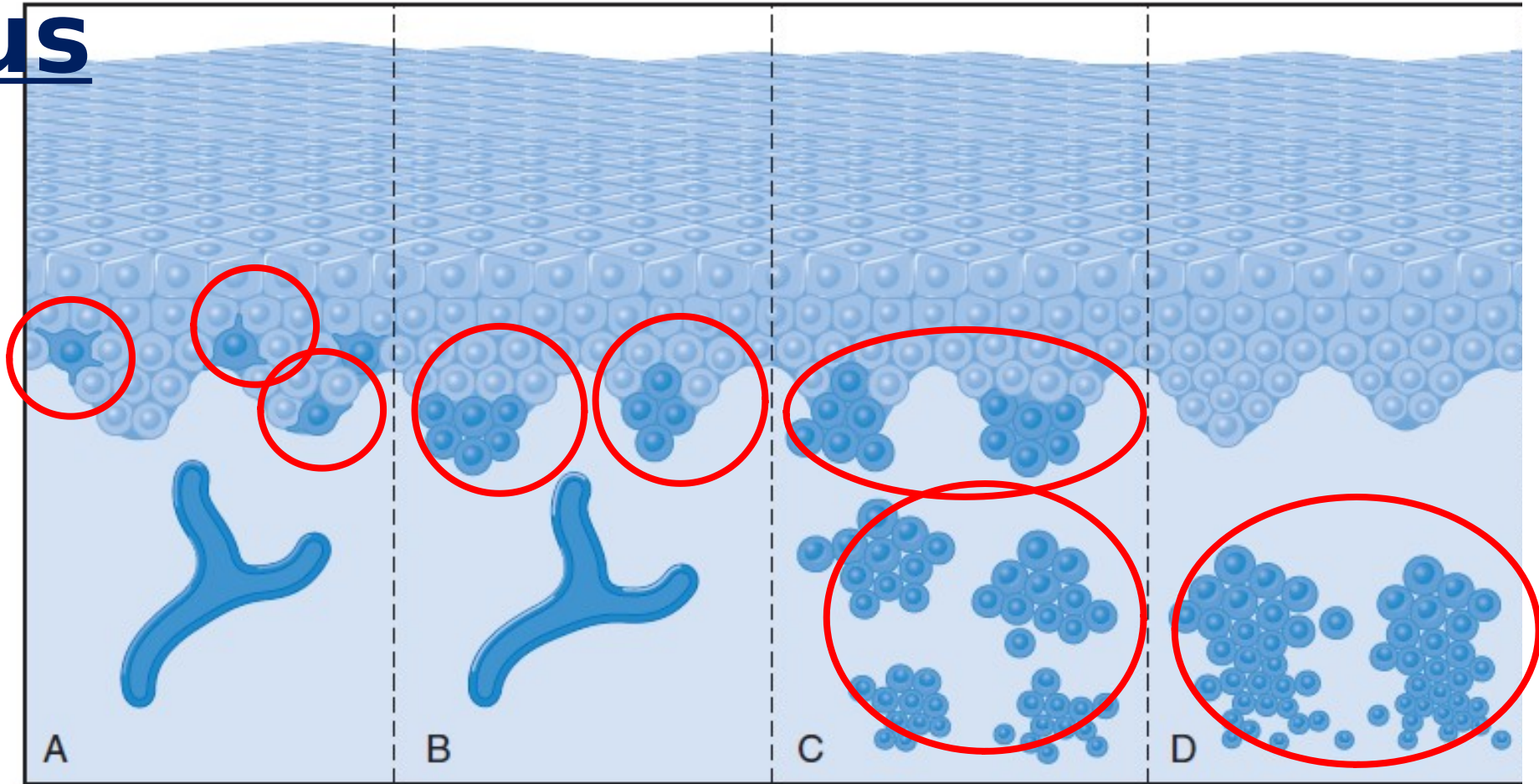
- **Junctional nevi** (i.e., nests of nevus cells at the dermoepidermal junction) are the earliest lesions.
- **Compound nevi** develop as nests or cords of melanocytes extending into the underlying dermis.
- **Dermal nevi**, the epidermal component is lost.
- As nevus cells enter the dermis they undergo **maturation**, becoming **smaller** and **nonpigmented**.



Melanocytic lesions



Nevus



POCKET COMPANION TO ROBBINS AND COTRAN PATHOLOGIC
BASIS OF DISEASE eighth edition, 2017, ISBN: 978-1-4160-5454-2
(P590-611) 5/11/2024

Pathology Department

Time →

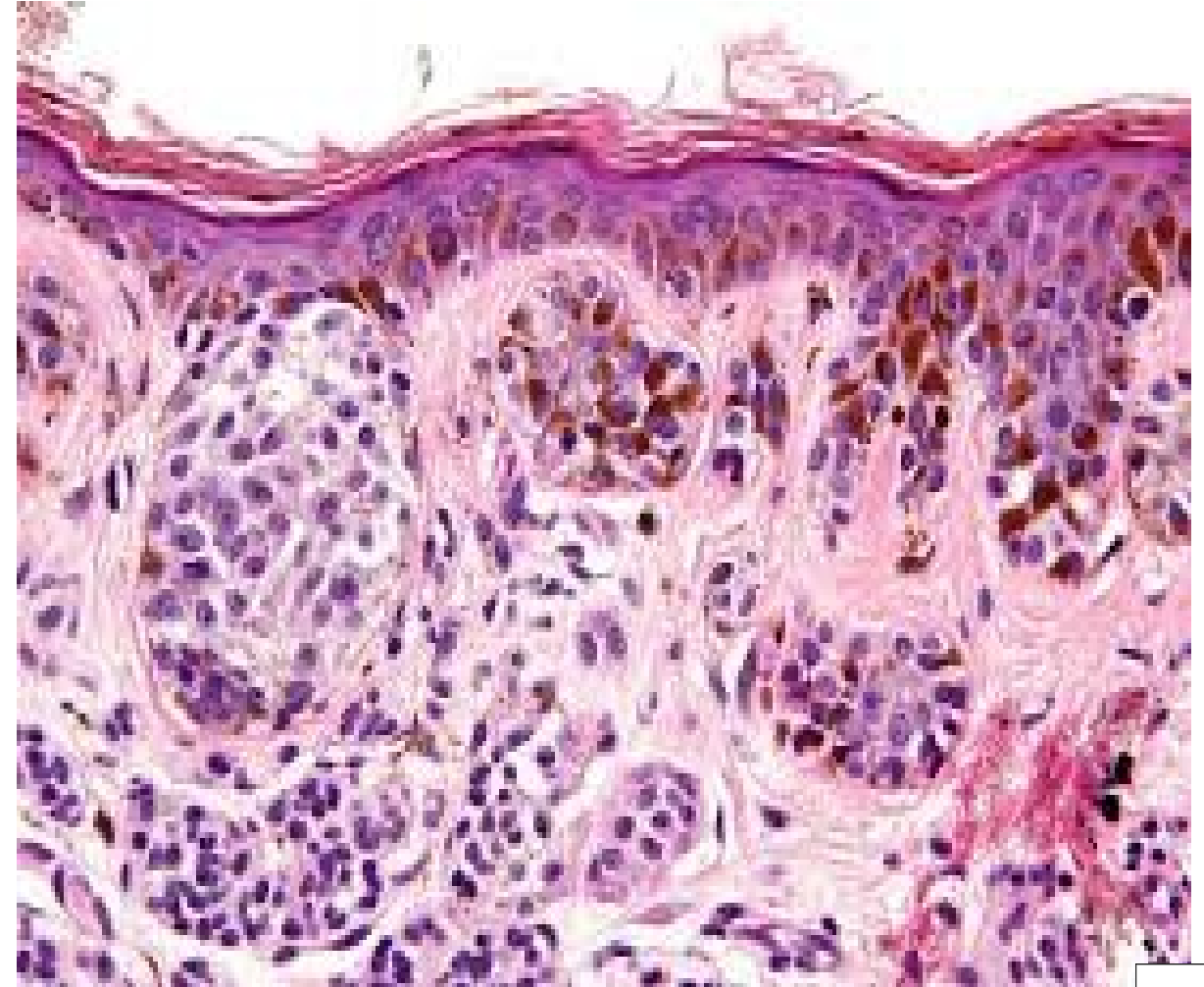


Melanocytic lesions



Nevus

- **Microscopic picture:** the nevi are composed of **nests** formed of round to oval cells having uniform and rounded nuclei. There is variable amount of melanin pigment, **mostly extracellular in the superficial part** of nevus.



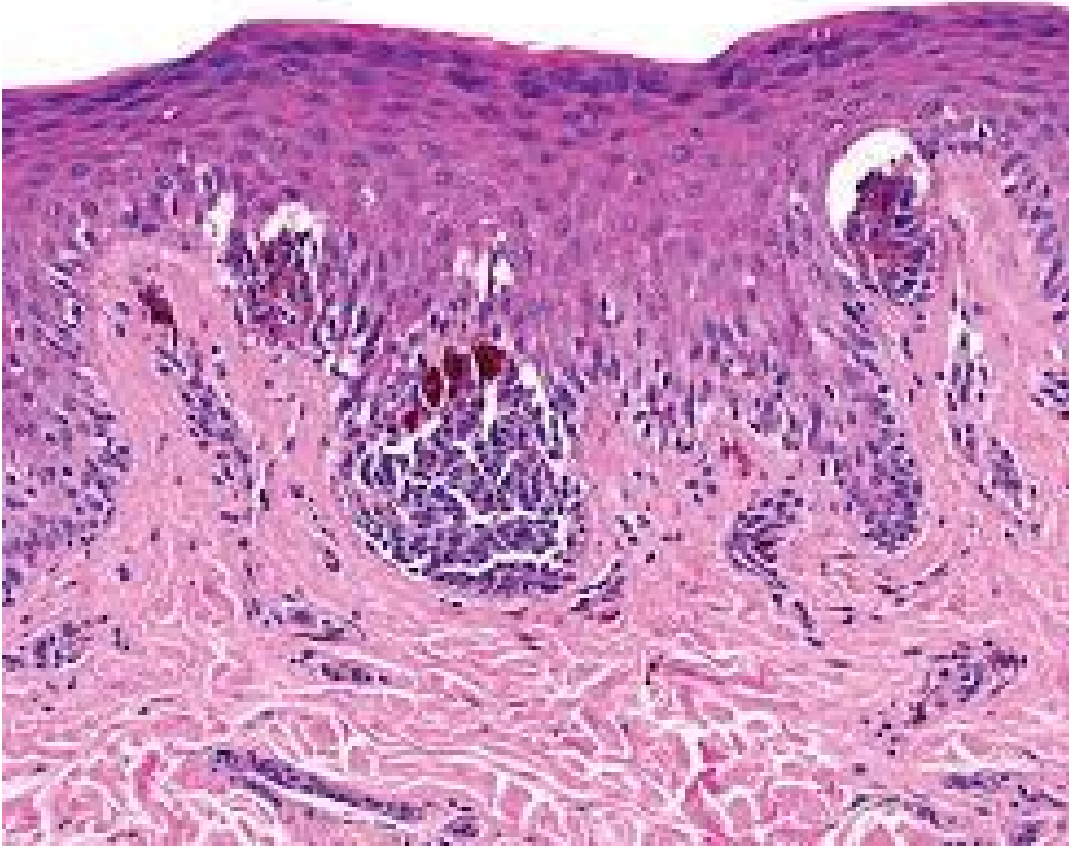
https://commons.wikimedia.org/wiki/File:Dysplastic_nevus_-_high_mag.jpg



Melanocytic lesions

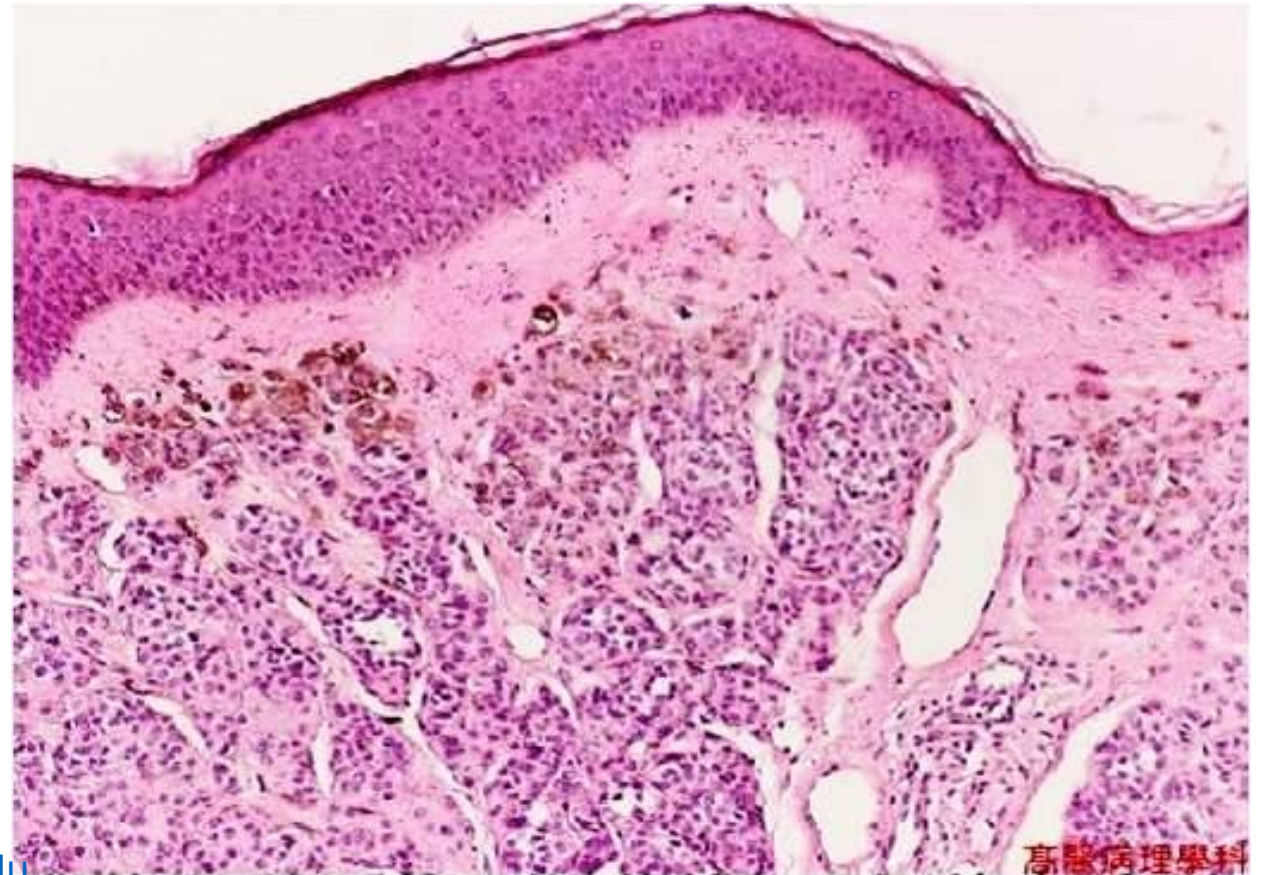


Nevus



<https://www.pathologyoutlines.com/topic/skintumormelanocyticjunctionalnevus.html>

Junctional nevus



<http://pathology.class.kmu.edu.tw/ch17/Slide135.htm>

Dermal nevus



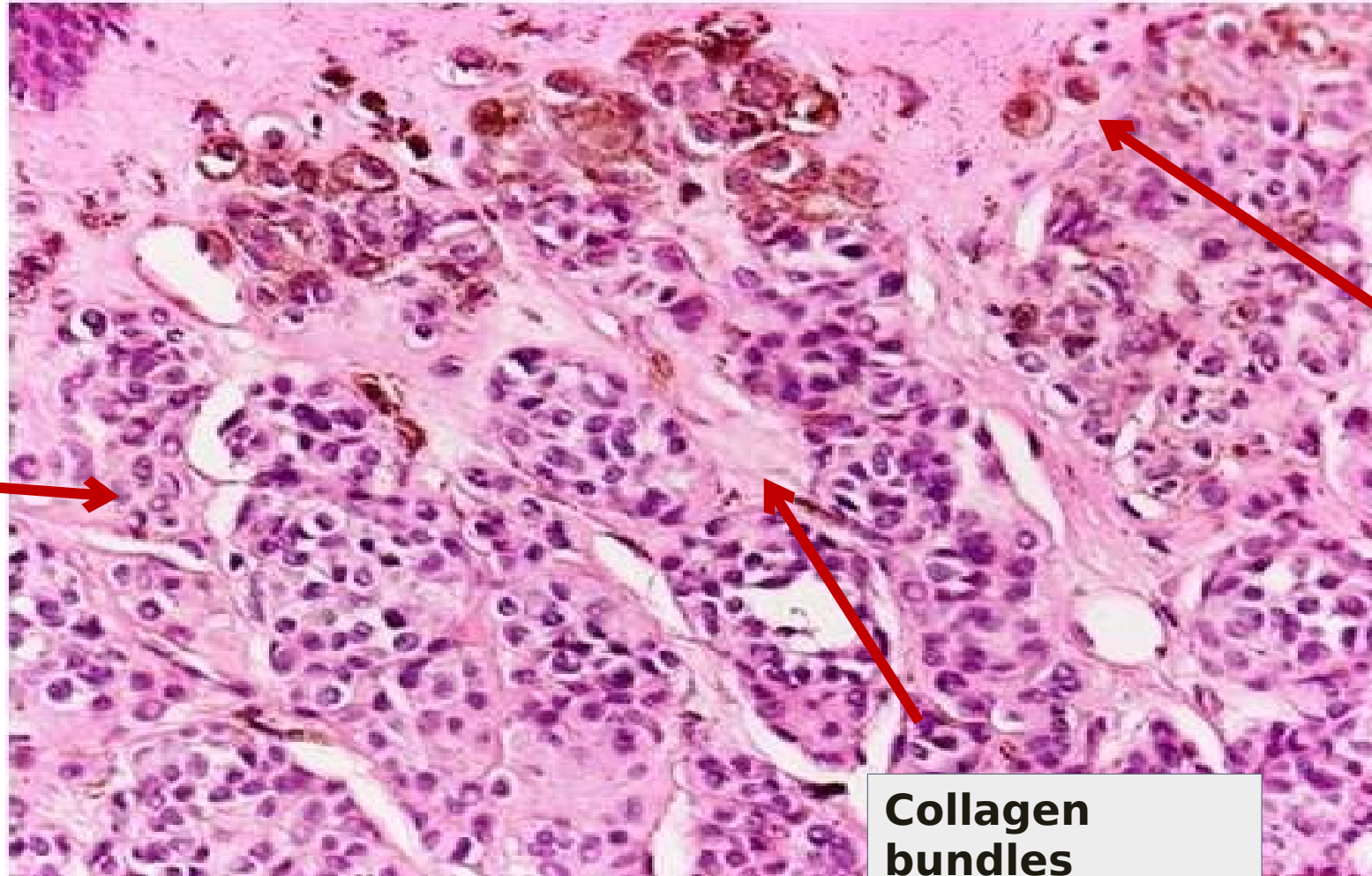
Melanocytic lesions



Nevus

Nevus cells

- ❑ Small, rounded with
- ❑ rounded nuclei
- ❑ & scanty cytoplasm



Nevus cells with intracellular dark brown melanin pigment

Collagen bundles



Quiz



Which of the following describes compound nevus?

- A. Nests of nevus cells at the dermoepidermal junction
- B. Nests of epidermal melanocytes extending into the underlying dermis
- C. Nests of nevus cells in the dermis only
- D. Infiltration of the dermis by malignant melanocytes
- E. Infiltration of the dermis by malignant cell nests



Quiz



Which of the following describes compound nevus?

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- E. Infiltration of the dermis by malignant cells



Melanocytic lesions



Malignant melanoma

It is less common but more fatal than basal or squamous cell carcinoma.

It is related to sun exposure.

More in fair skin persons

- **Sites:** Skin, anogenital surfaces, esophagus, meninges & eye.



<https://www.healthline.com/health/cancer/stage-4-melanoma-pictures>



Melanocytic lesions



Malignant melanoma

- Gross picture:
Melanomas are **larger** than nevi with **irregular border** and **marked variation in pigmentation** with shades of black, brown, red and dark blue.
- clinical signs are **recent**



<http://cancerlink.ru/cancer/oncology/section-9-skin-cancer/4-melanoma/>



Melanocytic lesions



Malignant melanoma

Tumor development shows two phases:

- 1. The radial growth phase:** melanoma cells grow **horizontally** within the epidermis **without** invading the basement membrane (The lesion is **flat** clinically), so they do **not** induce angiogenesis or metastases.
- 2. The vertical growth phase:** the tumor grows **downward** into the deeper layer of the dermis (Clinically a **nodule** develops within a previously flat lesion). so they can **send** metastases.



Melanocytic lesions



Malignant melanoma

1. In the horizontal insitu phase:

- Melanoma cells form poorly formed **nests at dermoepidermal junction**.
- Single cells & small groups are seen scattered in the upper epidermis.

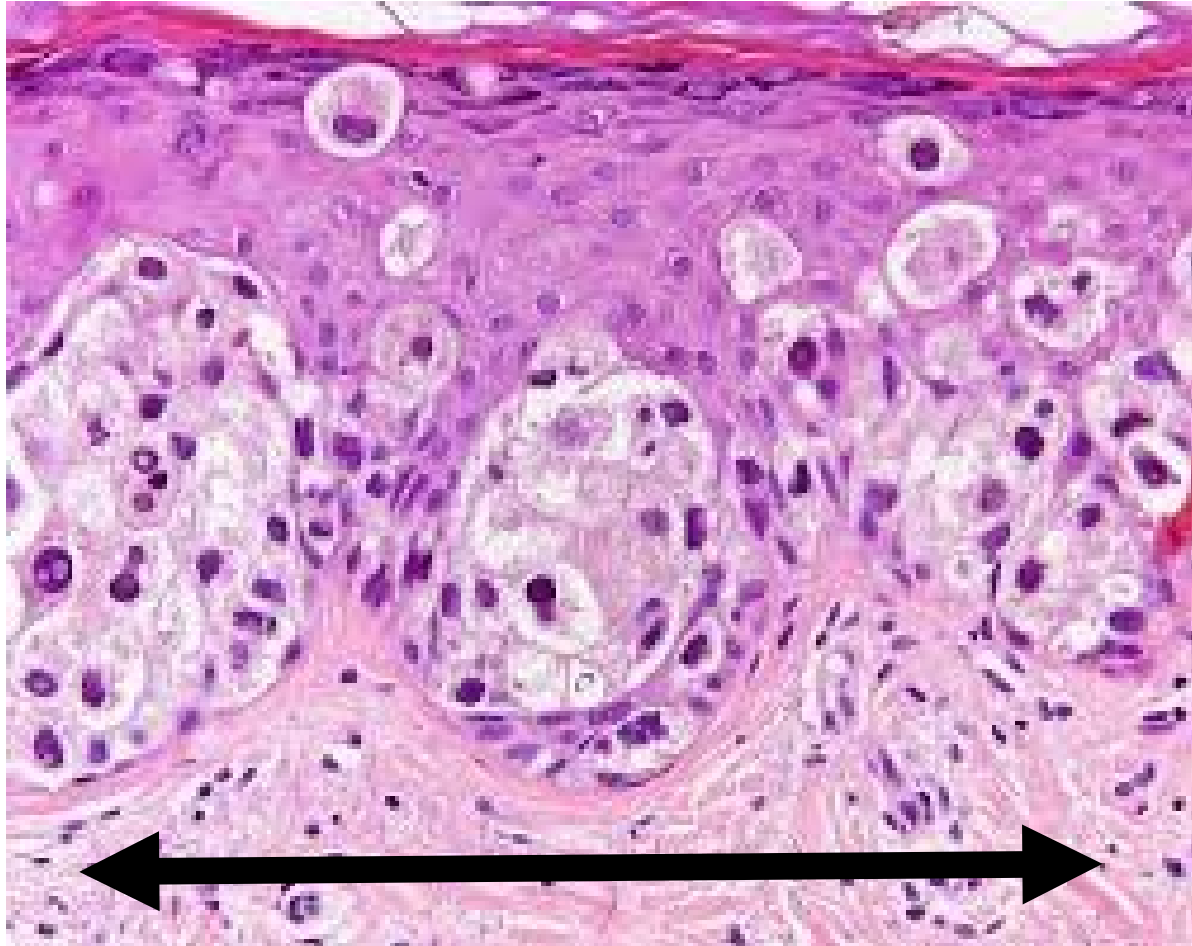
2. In the vertical phase:

- The cells form dermal nodules showing band of lymphocytic infiltrate at its base which reflect host response to tumor antigens.
- Melanoma cells may be large rounded cells with large nuclei having **cherry red eosinophilic nucleolus** (in the epithelioid appearance) but the melanoma cells may be spindle (in the sarcomatous appearance).

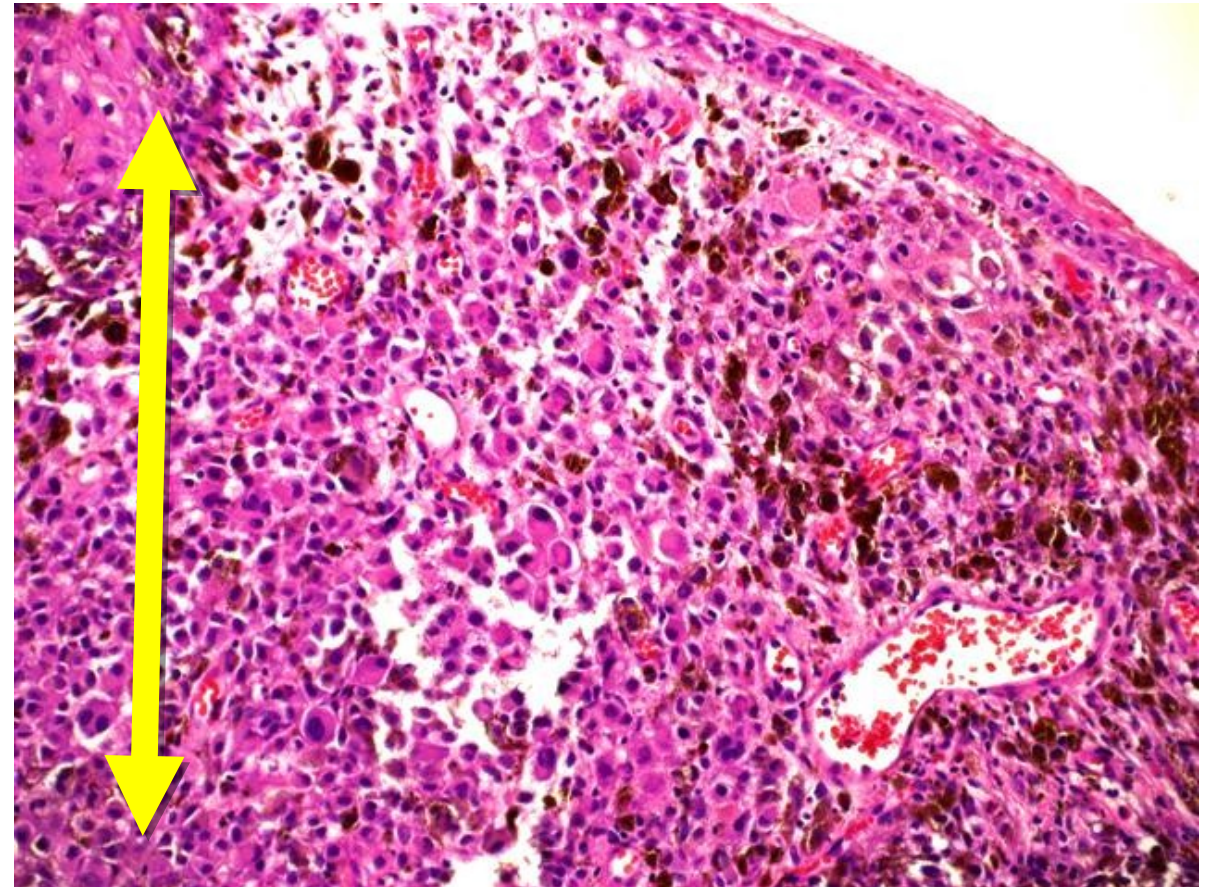
Melanocytic lesions



Malignant melanoma



<http://melanocypathology.com/kickstart-course/classical-cases/melanoma-in-situ>



<http://www.pathologyoutlines.com/topic/anusmelanoma.htm>

Department

26



Melanocytic lesions



Malignant melanoma

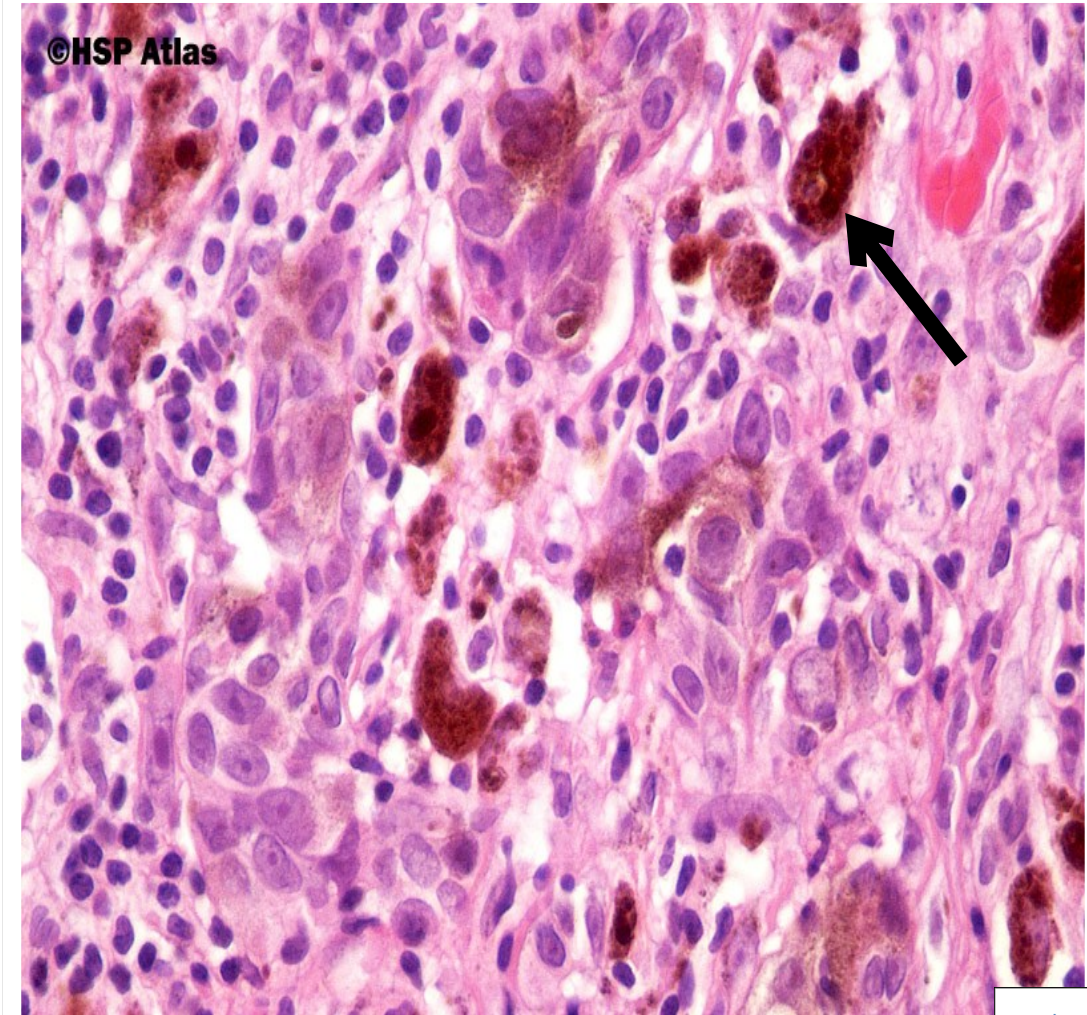
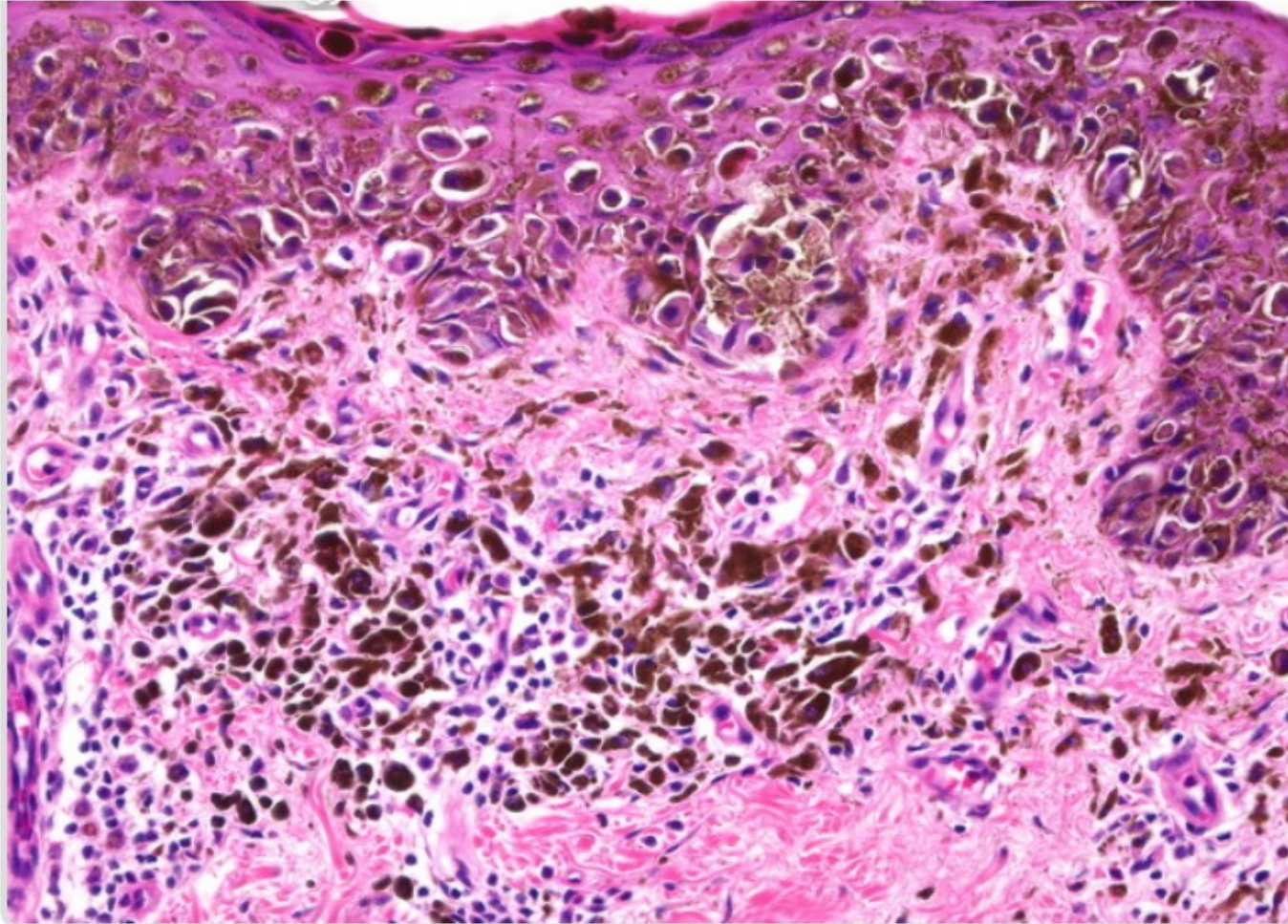
- 1- Infiltration of the epidermis and dermis with groups of malignant cells; rounded, or spindle shaped
- 2- The malignant cells are large and variable in size and shape having hyperchromatic nuclei and cytoplasmic dark brown melanin pigment.
- 3- The stroma is scanty and shows extracellular melanin deposits.



Melanocytic lesions



Malignant melanoma



Melanocytic lesions



Malignant melanoma

Behavior:

aggressive tumour with frequent distant metastases.

The probability of metastases is predicted by measuring the depth of invasion.

Quiz



All the following are types of melanocytic lesions except:

- A. Dermal nevus
- B. Junctional nevus
- C. Compound nevus
- D. Malignant Melanoma
- E. Basal cell carcinoma



Quiz



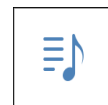
All the following are types of melanocytic lesions except:

- A. Dermal nevus
- B. Junctional nevus
- C. Compound nevus
- D. Malignant Melanoma
- E. Basal cell carcinoma**



- **Nevus:** Congenital or acquired benign neoplasm of melanocytes
- **Melanoma:** It is less common but more fatal than basal or squamous cell carcinoma. It is related to sun exposure.
- **Melanoma:** Melanoma cells may be large rounded cells with large nuclei having **cherry red eosinophilic nucleolus** (in the **epithelioid** appearance) but the melanoma cells may be **spindle** (in the **sarcomatous** appearance).





SUGGESTED TEXTBOOKS



1. Pocket companion to robbins and cotran pathologic basis of disease eighth edition, 2017, isbn: 978-1-4160-5454-2 (P590-611)
2. Kaplan step 1 pathology lecture notes 2017 (P.78-98)